



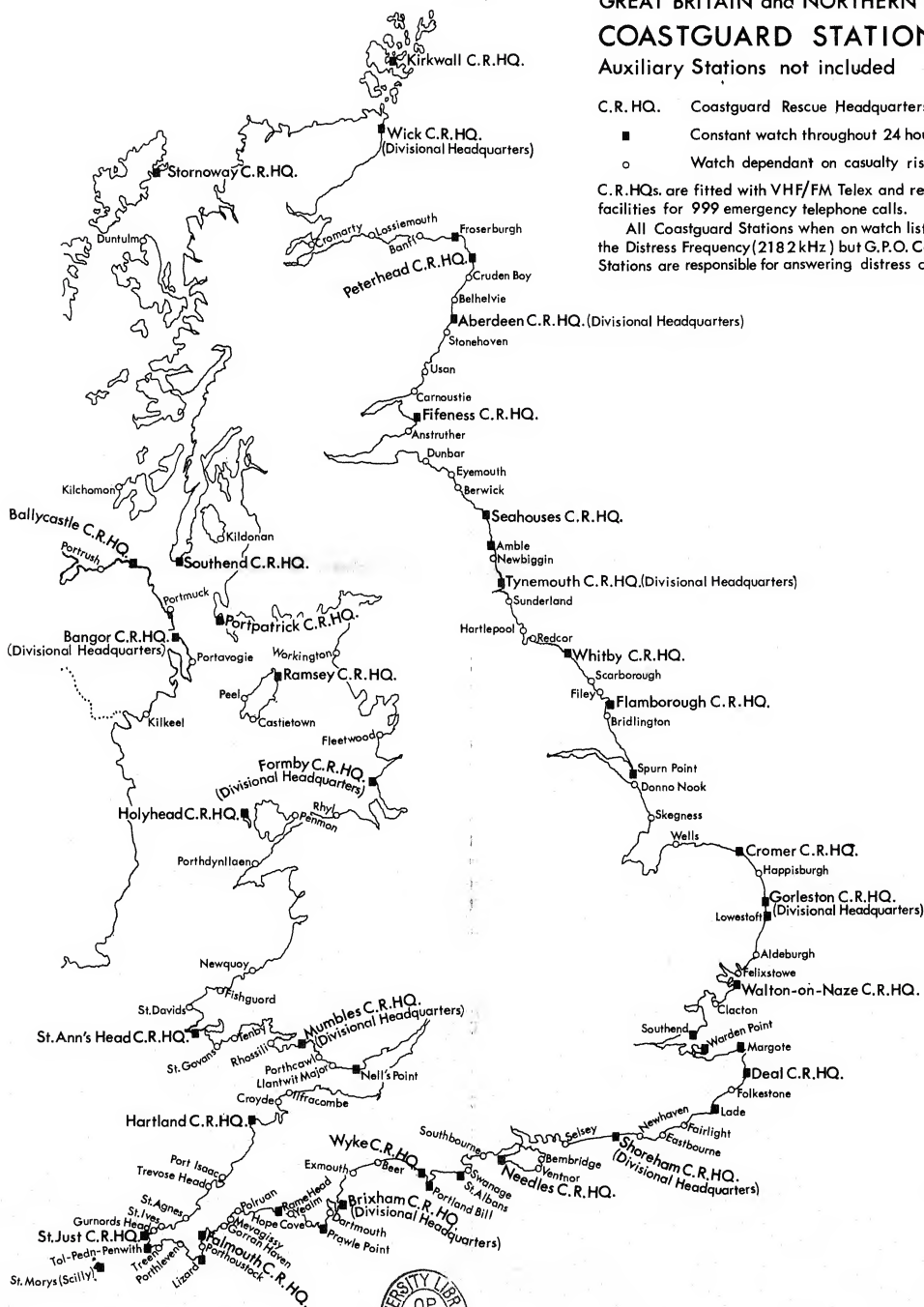
## GREAT BRITAIN and NORTHERN IRELAND COASTGUARD STATIONS

Auxiliary Stations not included

- C.R.HQ. Coastguard Rescue Headquarters
- Constant watch throughout 24 hours
  - Watch dependant on casualty risk

C.R.HQs. are fitted with VHF/FM Telex and reception facilities for 999 emergency telephone calls.

All Coastguard Stations when on watch listen out on the Distress Frequency (2182 kHz) but G.P.O. Coast Radio Stations are responsible for answering distress calls.



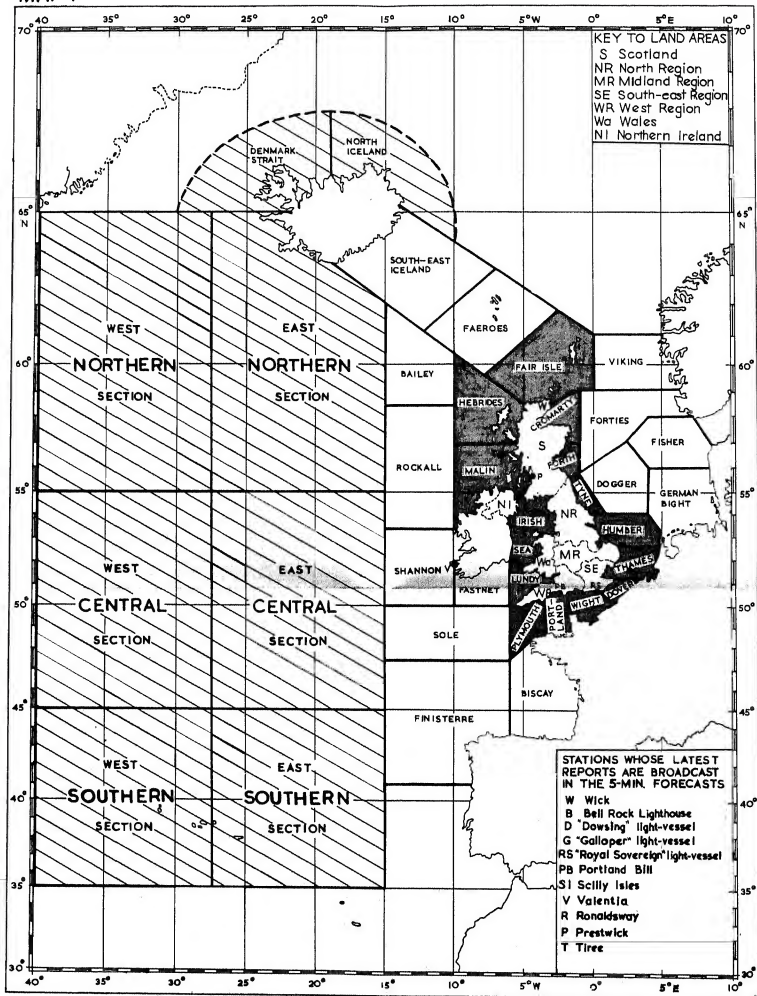
# LIFE-BOAT CHART OF GREAT BRITAIN AND IRELAND

SHOWING OPERATIONAL AREAS AND  
ORGANISATIONAL DISTRICTS 1969

- Indicates the positions of the 139 life-boats of the Royal National Life-boat Institution
- Indicates the location of 71 inshore rescue boat stations operational during the summer months only.
- ▲ Indicates the location of 33 inshore rescue boat stations operational all the year round
- ⊙ Indicates the positions of stations where both life-boats and inshore rescue boats are in service
- ① Figures enclosed in circles indicate numbers of life-boat areas



MAP I



Boundaries of sea and land areas, as used in BBC and Post Office weather forecasts

Weather within an estuary, and particularly the visibility there, may often be expected to differ from that forecast for the coastal sea area in which the estuary lies, though this will not necessarily be mentioned in the forecast.

The tinted sea areas are those for which visual gale warning signals are displayed.

The hatched areas, also Biscay and Finisterre, are included in the Atlantic Weather Bulletin for shipping, broadcast by radio (Post Office) from Portishead. The other areas (both tinted and plain), again including Biscay and Finisterre, are included in the BBC and appropriate Post Office bulletins.

Times of BBC forecasts: 0202-0207, 0640-0645, 1155-1200 (Sunday only), 1355-1400 (Monday to Saturday only) and 1757-1800 (all times, BST).



## Appendix H

## Comparison of Marine SAR Organisations in Other Countries

Country	Primary responsibility for controlling and co-ordinating SAR units	Aircraft controller	Types of aircraft	Radio equipment in aircraft	Life-boat controller	Type of life-boat	Radio equipment in life-boats	Responsibility for beach incidents
West Germany	Deutsche Gesellschaft zur Rettung Schiffbrüchiger (DGzRS) for civil SAR. Navy SAR centre for military aircraft and ships.	Navy	Fixed wing, ) amphibious ) Helicopters )	VHF (AM & FM) and M/F homing on 500 & 2182 kHz and 243 MHz.	DGzRS	Cruisers and motor life-boats, some with daughter boats for inshore rescue	R/T M/F and VHF (All have marine, some have aviation frequencies)	Local authorities. Deutsche Lebensrettungsgesellschaft (DLRG) provide voluntary lifeguards and IRBs
Belgium	Ostend Pilotage Service, controlled by Marine Administration, for surface craft. Air Force, through RCC, for aircraft casualties.	Air Force	Fixed wing ) Helicopters )	VHF & M/F homing on 243 MHz	Pilotage Service	Motor life-boats  Pilotage motor launches. Pilot cutter	M/F  VHF VHF and M/F	Bathing masters supervise permanently. Rowing boat or motor boat anchored at seaward limit of bathing area
Norway	Royal Ministry of Justice and Police	Air Force. Some private aircraft also used	Fixed wing ) Helicopters )	VHF & M/F homing on 243 MHz and 2182 kHz.	Norwegian Lifeboat Institution	Cutters and land-based rescue boats	R/T M/F	No special arrangements
France	Coastal areas - Marine Marchande at sea - Navy. RCC for aircraft	Navy for fixed wing. Navy, Police and Civil Defence for Helicopters	Fixed wing  Helicopters	VHF & M/F homing on 121.5 and 243 MHz and 500 kHz. VHF & M/F homing on 243 MHz and 500 kHz.	National Society for Life Saving at Sea (SNSM)	Large life-boats, patrol vessels and inflatable dinghies	H/F (AM) FM sets being issued. In addition, larger units have M/F	Mayors of Communes. Assistance of maritime authorities may be asked for, but no special arrangements
Irish Republic	Navy	Air Corps	Fixed wing  Helicopters	VHF & M/F homing on 500 kHz. VHF VHF	RNLI	Motor life-boats and IRBs	M/F and VHF (FM & AM)	Local sanitary authorities
Portugal	Naval Command. Can delegate to Maritime Defence of Ports (CDMP)	Air Force	Helicopters		Institute of Life-saving (ISN)	Motor life-boats	M/F	Concessionaries of bathing zones. ISN and harbour masters assist
Denmark	Navy for surface craft casualties. Air Force for aircraft casualties. Can delegate to sub-centres if necessary. Each rescue centre can dispose of civil and military rescue craft of each service.	Air Force	Fixed wing  Helicopters	VHF & M/F homing on 500 kHz. VHF & M/F homing on 243 MHz and 2182 kHz	Danish Life-boat Service	Motor life-boats	A few can home on 2182 kHz	There are beach watchers
The Netherlands	No specific body in command. Scheveningen Radio alerts and is advised by other authorities, of action taken.	Navy	Fixed wing ) Helicopters )	VHF & M/F	Koninklijke Noord-en Zuid-Hollandsche Reddingmaatschappij (KNZHRM) and De Koninklijke Zuid-Hollandsche Maatschappij tot redding van Schipbreukelingen (KZMtRvS)	Motor life-boats	VHF	Municipal authorities organise volunteer brigades and in some cases Police assist. Some boats are available



## Introduction

- 1 We were appointed in November 1967 with the following terms of reference:

“To review the Marine Search and Rescue Organisation in the United Kingdom, and to make recommendations for any improvements considered to be necessary. To examine the liaison with search and rescue organisations in other countries, and if necessary to make recommendations concerning representations that might be made to these other countries.”

When discussing our terms of reference it was agreed that they should not be taken to include arrangements for sea shore incidents, such as bathers in difficulties, people cut off by the tide, or cliff climbing incidents. The organisation will help in rescue where possible, but we considered that any arrangements designed specifically to cope with these incidents were outside the main function of the Marine Search and Rescue Organisation which is designed to deal with casualties at sea.

- 2 The last review of the arrangements for search and rescue was completed in 1955. This had been initiated specifically to review the adequacy of the arrangements following the loss of the “Princess Victoria” in 1953. There was no such specific reason for the present review. It was merely felt that after such a lapse of time it would be useful to look at the arrangements again. The United States Coast Guard held an international seminar on search and rescue at sea in New York in 1965 which was attended by United Kingdom representatives and following this, it was thought that the present review should cover liaison with other countries.
- 3 The Committee, which was under the chairmanship of the Board of Trade, had representatives from:
  - The Ministry of Defence
  - The General Post Office (the Post Office from 1 October 1969)
  - The Ministry of Agriculture, Fisheries and Food
  - The Department of Agriculture and Fisheries for Scotland
  - The Meteorological Office
  - The Chamber of Shipping of the United Kingdom
  - The Royal National Life-boat Institution
  - The Merchant Navy and Airline Officers’ Association
  - The Mercantile Marine Service Association

For some of the discussions on specific topics representatives from the Home Office, Royal Yachting Association and the British Trawlers' Federation Limited were invited to attend meetings.

- 4 As a full Committee we met 21 times. There were also three meetings of a working group we set up to produce a draft of a manual on search and rescue at sea for masters of ships. This is now before the Inter-Governmental Maritime Consultative Organisation (IMCO) and it is hoped that a manual for masters will be agreed internationally.
- 5 The withdrawal of the RAF helicopter detachment at Manston on 31 March 1969, and the announcement of a further withdrawal from Chivenor in 1972, caused us to look particularly at the need for helicopters in marine search and rescue.
- 6 The report first covers the main structure of the organisation and the interaction of its component parts. Later chapters deal with various particular aspects e.g. the use of aircraft, radiocommunications, small craft. An appendix gives information about the search and rescue arrangements in some other countries.
- 7 We considered that the United Kingdom arrangements for marine search and rescue work extremely well, and we have not recommended any drastic changes. Since the last review, there have been a number of changes which have to a greater or lesser degree affected search and rescue in this country. The following is not an exhaustive list, but gives a broad indication. Some are mentioned in the main body of the report:
  - (i) the establishment of IMCO, which was followed by the 1960 Safety of Life at Sea Conference;
  - (ii) the introduction of a voluntary system of position reporting by trawlers;
  - (iii) the closing down of the United Kingdom shore based direction finding (D/F) system operating mainly on 500 kHz;
  - (iv) introduction of radio rules affecting certain classes of fishing vessels;
  - (v) general improvement in radiocommunications within the organisation, and the carriage by Shackleton aircraft of suitable radio equipment for communicating with ships.
- 8 In recent years there has been a large increase in the calls made on the rescue services. In particular there has been an increase in pleasure sailing and motor boating round the coasts of Britain, with an inevitable increase in the calls on the search and rescue organisation. For example 1030 small boat incidents were handled by HM Coastguard in 1968



compared with 429 in 1964. In total, excluding false alarms, there were 2039 incidents in 1968 compared with 929 in 1964. These calls have been met and we do not think that there is a need to set up in this country any national marine rescue organisation on the lines of the United States Coast Guard to bring together all aspects of marine search and rescue. But as more and more people put to sea in small boats there is a constant need for training and educating them, and it may eventually become necessary to consider some method to restrain those who would otherwise make a call on the rescue services through foolhardiness.

- 9 It has been difficult to arrive at a rational basis for costing SAR organisation and activity in the United Kingdom. Some of the organisations are fully committed to the function. Others, including the defence elements, are established for other purposes, but devote such effort as can be spared from the primary tasks to assist in civil marine SAR. We would estimate that at least £4 million is spent every year on civil marine search and rescue. Additionally ships incur financial losses as a result of taking part in search and rescue operations. There may be a case for passing some of the burden from the taxpayer to those who benefit more directly from the SAR services, particularly if our recommendation, that helicopter coverage should be maintained when the RAF and RN military units are withdrawn, is accepted.

#### Acknowledgements

- 10 The Chairman, in presenting this Report, wishes to acknowledge with gratitude the valuable co-operation he has had, and the useful contributions made by members of the Committee, some of whom had to travel long distances to be present at the meetings. During the course of the Committee's work there were a number of changes in its composition, including a change of Chairman. A list of the principal representatives of the various organisations which took part is at Appendix J. The Chairman also wishes to thank the Secretary for all his work, which was invaluable to the Committee.

## **Chapter 1     The Various Parts of the Search and Rescue Organisation**

11    The present arrangements in the United Kingdom for search and rescue at sea involve the co-operation, whenever a casualty occurs or may be suspected, of one or more of the undermentioned bodies or individuals according to the circumstances of the casualty:

- (i)    the master of a ship in distress or the pilot of an aircraft casualty;
- (ii)   masters of ships in the vicinity;
- (iii)   HM Coastguard;
- (iv)   officers of the Fishery Departments;
- (v)    the Royal National Life-boat Institution;
- (vi)   the Ministry of Defence (Royal Air Force, Royal Navy, and Meteorological Office ocean weather ships);
- (vii)   coast radio stations operated by the Post Office;
- (viii) Air Traffic Control Centres;
- (ix)   Lloyd's.

### **Lloyd's**

12    Of these, Lloyd's are only on the fringe of search and rescue operations. Because of their traditional interests in maritime activities they are concerned to notify tugs and salvage companies of vessels requiring assistance. They also often initiate broadcast messages when ships are overdue.

### **Master of a Ship in Distress and Masters of Ships in the Vicinity**

13    We did not consider that ships at sea formed part of the Search and Rescue Organisation we were set up to review. But there is clearly a close connection. The ship in distress is the focal point of the efforts of the Search and Rescue Organisation, whilst ships in the vicinity of a distress at sea are often the medium through which rescue is achieved. Whilst not therefore reviewing the various international requirements governing the procedures of ships in distress or going to their assistance, we thought it desirable that some practical guidance should be given to masters. Upon the initiative of the Chamber of Shipping representatives we therefore produced, for the use of masters at sea, a relatively simple manual about search and rescue operations. As ships of all nationalities could be involved in such



operations we considered that international agreement on the procedures outlined was essential, and therefore forwarded the manual to IMCO with a view to having it discussed internationally. IMCO immediately set up a special working group to examine the manual. The working group held two meetings in New York, in February and May 1969, and produced an agreed draft of a search and rescue manual for the use of masters, based very largely on what we submitted. Entitled "Merchant Ships Search and Rescue Manual" - short title "MERSA" - it has been circulated to member countries of IMCO for comment. The draft is due to be discussed by the Maritime Safety Committee of IMCO in February 1970. Although the title of the manual only mentions merchant ships, its contents apply equally to skippers of fishing vessels.

### **Land Based Search and Rescue Organisation**

- 14 The remaining parts form together the United Kingdom Search and Rescue Organisation. We did not examine the internal working of each separate part, believing this to be more the function of the individual government department or private body concerned. For example the Coastguard service was reviewed by a working group which was set up in June 1966 and reported to the Board of Trade in June 1968; and the Inspector General of the RAF conducted an examination of their organisation in November 1966 following the loss of the pleasure boat "Darlwyne". We did, however, carefully examine how the various parts fit into the pattern of search and rescue, and the proper allocation of responsibility. In particular we examined the implications of the fragmentation of effort among so many different autonomous bodies, and the two different search and rescue procedures in the marine and aviation fields.

### **HM Coastguard**

- 15 HM Coastguard are the authority responsible for initiating and co-ordinating the civil search and rescue measures for all vessels in distress off the coasts of the United Kingdom. The area over which this responsibility extends approximates to that which can be reached by long range aircraft capable of operating up to 1,000 miles from the shore, and is bounded by latitudes 43° and 68° North, by longitude 30° West and by the coastline of Western Europe or 8° East, whichever is nearer to the coastline of the United Kingdom. This area is larger than that laid down by the International Civil Aviation Organisation (ICAO) for the operation of United Kingdom searching aircraft. It is only a rough working guide for the Coastguard, and clearly in much of it there has to be liaison with foreign search and rescue authorities. For fishing vessels operating a position reporting system the Coastguard would initiate any necessary action whether or not the last

known position of the vessel were within these limits. IMCO is already aware of the lack of precise areas of responsibility for marine search and rescue, and may well decide to discuss the matter.

- 16 The Coastguard service is organised in 10 divisions, each under the authority of an Inspector. Each division is divided into three districts, controlled by District Officers from their Coastguard Rescue Headquarters (CRHQ). There are 127 Coastguard stations manned by regular Coastguards and 245 auxiliary Coastguard stations. There are 500 regular Coastguards assisted by about 7,000 part-time auxiliary Coastguards. Most of the latter are members of the Coastguard Rescue Companies which man breeches buoy and other rescue equipment, and carry out searches along the coast when required.
- 17 The Coastguard maintain a constant watch at 48 stations, 31 of which are designated as Coastguard Rescue Headquarters, the remaining 17 being sited where there is a large volume of coastal and fishing traffic or exceptional navigational hazards. There are intermediate stations where watch is kept during predictably busy times of the day and in bad weather (when wind is Force 6 or more). In addition to visual watch, the radio-telephone distress frequency of 2182 kHz is monitored, information is obtained or put out by telephone and telex, and radio watch is kept on a special very high frequency (VHF) Coastguard - RNLI - helicopter channel (Channel 0) or on Channel 16. When information of a casualty is received the watchman takes whatever immediate action is considered necessary (e.g. a red flare sighted probably requires the immediate launch of the local life-boat, and the answer to the flare by the authorised signal) before reporting to his District Officer. The latter satisfies himself that all the necessary action is under way, and reports to his Divisional Inspector at the earliest opportunity. The evaluation of each incident, its relative importance or otherwise, the help required, the pursuit of additional information, the distribution and priority of action signals, the recording of information and of the advice sought, is often a difficult and complicated task. The correct procedure for controlling incidents is kept constantly under review; a written report on every casualty is submitted to the Chief Inspector of Coastguard.
- 18 Once life-saving measures have been initiated by the Coastguard they are responsible for calling on other authorities for assistance, and will follow the incident through until no further help is required.
- 19 In coastal areas the emergency 999 telephone system has been extended to cover HM Coastguard as well as the Fire and Ambulance services and the Police, and appropriate notices are displayed in telephone booths.

It is unfortunate that no priority can be given to a 999 call through an automatic trunk exchange, but as we understand from the Post Office that to overcome this difficulty would be very costly, we make no recommendation on the matter.

- 20 In spite of publicity on television and through other media, the public is still not sufficiently aware that the Coastguard are available for emergencies in coastal areas and *we recommend more publicity should be given to the Coastguard service.*

### **Officers of the Fishery Departments**

- 21 When an owner, or any other person, considers a fishing vessel to be missing or overdue, a report is normally made to the District Inspector of Fisheries (Inspector of Sea Fisheries or Fishery Officer in Scotland); who notifies the nearest District Officer of Coastguard, giving him all possible relevant information concerning the vessel. When an officer of the Fishery Departments is not immediately available the report is made direct to the District Officer of Coastguard and is repeated as soon as possible thereafter to the Fisheries Officer who, in either event, co-operates with the District Officer of Coastguard in the rescue operation.

### **Royal National Life-boat Institution**

- 22 The RNLI is a private organisation incorporated by Royal Charter for the sole purpose of saving life at sea from shipwreck on or near the coasts of the United Kingdom, the Channel Islands, the Isle of Man and the Republic of Ireland. Operationally it is organised into nine areas each under the authority of an Inspector of Life-boats. Its active fleet at present consists of 137 life-boats, including six 44 foot steel boats, capable of 13 knots, and two 70 foot steel boats with full crew accommodation, and capable of 11 knots. The remaining life-boats vary in length from 35½ feet to 52 feet with a maximum speed of eight to nine knots. Depending on their type, life-boats can embark between 50 and 120 survivors and all have a radius of action of at least 90 miles. Of the life-boats in service 38 are of the self-righting type and 8 more of these are in the course of construction with an additional 3 on order. About a third of the fleet have radar fitted and half have D/F equipment operating on 2182 kHz. Three boats are equipped with Decca Navigator equipment. All life-boats carry medium frequency radiotelephony and the majority are fitted with marine type very high frequency, frequency modulated radiotelephony equipment (VHF/FM R/T). Practically all can also communicate direct with SAR fixed wing aircraft and helicopters on aviation type very high frequency, amplitude modulated radiotelephony equipment (VHF/AM R/T).

- 23 In 1963 the Institution introduced small fast inflatable boats (inshore rescue boats - IRBs) for inshore work. They are mainly for use during the summer, but a third are retained on station throughout the year. IRBs operate from 100 stations and at present approximately 50% of them are fitted with VHF/FM R/T.
- 24 In 1966 the RNLI started evaluating 17 foot and 18 foot hard hulled fast rescue boats; these trials are continuing at selected stations.
- 25 There is a reserve fleet of 27 life-boats for the relief of station life-boats which have been damaged or are under survey, and about 20 IRBs are also held in reserve.
- 26 The RNLI is not administered or controlled by any government department and receives no subsidy from the State. It is supported entirely by voluntary contributions. It is authorised by its Charter, inter alia, to grant pecuniary awards not only to persons who man its life-boats or otherwise assist in saving life from shipwreck, but also to any persons who use any other boats launched from the shore for the same purpose or otherwise assist towards the same ends, and to confer any medals or honorary awards for distinguished gallantry in any such services. Since August 1962 approximately 800 of these other "shore" boats have been enrolled into a special Inshore Rescue Scheme, to supplement the RNLI's United Kingdom fleet. It is administered jointly by the RNLI and HM Coastguard and is responsible for rescuing about 200 lives a year, compared with about 1,000 rescued each year by RNLI craft.
- 27 The Coastguard have no authority in the placing or composition of RNLI vessels and can only request, not demand, the assistance of these vessels. We carefully considered how this affects the efficiency of SAR operations. Whatever may be the theoretical objections to divided command we found that there are none in practice. The RNLI is an organisation wholly dedicated to the single purpose of saving the lives of those who are in danger from any cause on or near the coasts. It seldom refuses a Coastguard request to launch and in the main relies on the Coastguard as its primary communication link and for most of its operational information. But the final decision whether a life-boat should launch rests with the local life-boat authority. Within this formal framework the two services work in the closest collaboration, and we can see no virtue in merging them. *We stress the need for this collaboration, both in operations and planning, to continue.*

#### Ministry of Defence

- 28 The Coastguard can request a search from the appropriate naval Commander-in-Chief who then decides if surface ships can and should be made available. The naval Commander-in-Chief can ask the RAF to carry out an air search. Air effort is controlled and co-ordinated by the Joint Service Rescue Co-ordination Centre. Surface effort is controlled and co-ordinated by RN

staff. However, as naval and air staff are co-located at a Maritime Headquarters, joint searches by the RN and RAF are effectively co-ordinated. If air assistance by helicopter is required, rather than a search, the Coastguard may make the request to the RCC or, if speed is essential, direct to the nearest helicopter base. In the latter event the helicopter crew will get RCC approval for the operation. In every incident assistance that can be given is subject to overriding Service commitment, but in practice the occasions on which it cannot be provided are rare.

- 29 The RAF have two Shackleton aircraft at continuous stand-by for SAR duties around the United Kingdom and in the Eastern Atlantic. The crews are at two hours readiness and aircraft are provided on a roster basis from the stations at Ballykelly (until about the end of 1970), Kinloss and St. Mawgan. These aircraft are capable of searching for 2½ hours at a distance of 1,000 miles from base, and when necessary other Shackletons or training aircraft may be called upon to support an operation. The standard rescue equipment carried by Shackleton aircraft is an apparatus consisting of three cylindrical containers connected in series by a buoyant rope. The largest container houses a dinghy which can accommodate nine persons, and inflates automatically when the container hits the water. Various aids to survival such as signalling equipment, water, food and first aid kits are in the other containers.
- 30 RAF helicopters are deployed in pairs, at Leuchars, Acklington, Leconfield, Coltishall, Thorney Island, Chivenor (until 1972) and Valley. They are Whirlwind helicopters and one of each pair is at 15 minutes readiness throughout daylight hours; they do not operate at night. They normally operate without an escort up to five miles from the coast although, in an emergency, this distance may be exceeded. With an escort, flights of up to 90 miles from the coast may be authorised, dependent on weather and load conditions. (RAF crash rescue boats are stationed at Thorney Island and Valley; these may also be used for inshore rescue purposes.)
- 31 Naval helicopters, also Whirlwinds, are based at Lossiemouth (until 1972), Brawdy (until around 1971/72), Portland and Culdrose and may be called upon to assist in search and rescue operations. They are, however, geared to naval flying training and are not at the same state of readiness as the RAF helicopters.
- 32 Meteorological Office ocean weather ships in the Eastern Atlantic, operated on behalf of ICAO also co-operate in search and rescue operations. The vessels are fitted with comprehensive radiocommunication facilities, navigational aids including a radio beacon, and search and rescue equipment; and the crews are trained to effect sea rescues. They maintain a constant listening watch for distress, urgency and safety messages from ships as well as aircraft, and will also accept requests for the continuous operation of their radio beacons in case of need. Normally the ships remain as close as possible to their assigned positions, unless it becomes essential for them to leave their stations for search and rescue. Under present international agreement these ships will operate until 1973.

## Coast Radio Stations

- 33 The Post Office's coast radio stations act as the essential radio link between ships at sea and the land based search and rescue organisation. Their activities are described in more detail in the chapter on radio-communications. It is sufficient here to state that we consider that they are fully efficient, and integrate effectively with the other parts of the search and rescue organisation. *We see no reason to suggest any change in the present arrangements.*

## Air Traffic Control Centres (ATCCs)

- 34 Throughout their flights civil airliners are in radio contact with Air Traffic Control Centres. In the United Kingdom there are ATCCs at Prestwick (Redbrae), Preston and London (West Drayton). If aircraft are in distress, or overdue, an RCC is informed by the ATCC. The RCCs which are operated in the United Kingdom by the Ministry of Defence (see paragraph 28), are responsible for initiating such action as may be necessary, including alerting the Coastguard and coast radio stations to bring in marine help. On those occasions when an ocean weather ship is required to assist in a search, the request is normally made by the RCC through the ATCC. In the ensuing operations it is the RCC rather than the Coastguard which co-ordinates action. Thus the procedure for aircraft in distress at sea differs from that for ships in distress, although final rescue in both cases is practically always by ships.
- 35 We examined the duality of operations to see if it affected the efficiency of SAR operations in any way. It seems to us that although in principle it would be better to have a single authority responsible for co-ordinating all SAR action, in practice there is no difficulty with the present arrangements. The initiation of search and rescue activities is bound to be different in the two cases. Clearly the ATCC will receive the first intimation of an aircraft in distress, and initiate action, whilst a ship in distress will broadcast on a marine distress frequency, and the message will be picked up either by another ship or by a coast radio station. We considered, however, whether the ATCC in the case of aircraft and the coast radio station in the case of ships, should alert a single co-ordinating body. The present arrangements, which provide for close liaison between the RCCs and the Coastguard, work satisfactorily, and *we see no reason to change them.*

- 36 It seems to us that the present arrangements for the use of aircraft in search and rescue operations are not ideal. The day to day operations work smoothly. The aircrews are fully dedicated in search and rescue operations. It is not a question of divided command; the Coastguard are rarely refused air assistance when they request it. The trouble lies deeper. It is because the aircraft used for search and rescue are, with few exceptions, military aircraft with a first priority to meet military needs. In practice this means that the equipment they carry is designed for military needs and the bases from which they operate are sited in accordance with such needs. Their operational capabilities are dictated by military requirements. None of these are necessarily the best for the purpose of civil marine search and rescue.

### Long Range Aircraft

- 37 For long range aircraft the location of bases is of minor importance. Communication facilities are of much greater importance. Shackletons can communicate by radio with ships on 2182 kHz and Nimrods, which will eventually replace them, should retain this facility; it is also desirable that they should be able to "home" on to transmissions on 2182 kHz, the radiotelephone distress frequency. We discuss this particular aspect more fully when dealing with radiocommunications.
- 38 Long range aircraft are clearly essential for searching, and in the open sea they are often the only means available. However, they are used only infrequently on such searches, so that their operation by other than military authorities seems impracticable at present on grounds of economy. We understand that the numbers of long range maritime patrol aircraft in service are likely to fall, and in the long term a situation could arise in which it would not be possible to carry out a distant search requiring many flying hours. This presents no immediate problem, however, and *we therefore have no recommendation to make beyond suggesting that the position be reviewed in a few years' time.*

### Helicopters

- 39 Military Whirlwind helicopters can operate up to about 90 miles from shore, but for civil search and rescue they rarely have to go so far offshore. Their main use is for inshore incidents such as small boat casualties, or people cut off by the tide, circumstances in which the need



for helicopters is debatable because the existing surface rescue units can cover the inshore areas. In particular the RNLI have fast inflatable craft with outboard engines (IRBs) specifically designed to cater for such incidents. These craft are relatively cheap, of the order of £1,000 each, and we examined carefully whether or not search and rescue near the coasts would be better served by stepping up the number of such craft rather than by using helicopters, whose capital and operating costs are very high. We considered also whether the helicopters' role of searching could be performed equally well by cheaper light aircraft. There seems no doubt that the cost-effectiveness of helicopters is low compared with that of IRBs. However, there are many cases where helicopters are at present the only means of effecting rescue from places which are difficult or impossible for surface craft to reach. Another important advantage is that they can usually get to ships at sea very much quicker than surface craft. The need for such speed does not arise in every case, but when it does occur it can make the difference between life and death. Also, searches from the air can cover wide areas much more efficiently and speedily than from sea level. In particular, helicopters can materially assist rescue by surface craft by acting as the eyes of these craft, which have a limited range of visibility especially when the sea is not calm. This kind of searching assistance can to some extent be met by light aircraft, but the ability to hover possessed by helicopters makes them much better vehicles for this purpose. Helicopters, moreover, can at times be used when the sea is too rough for IRBs to be launched. Apart from their use for normal SAR operations, helicopters, largely because of their speed, can be of great use in medical cases where it is essential to get sick or injured men from ship to shore quickly.

- 40 Helicopters have been used in SAR operations in the United Kingdom for several years and have a fine record of achievement. Moreover, all European countries of which we have SAR knowledge operate helicopters, generally military ones, for search and rescue purposes (see Appendix H). (It is interesting to note that Denmark provides large twin engined helicopters, one of which recently was able to uplift the whole crew of fourteen of a motor vessel in distress.) Considering all the factors involved we conclude *that in spite of their cost, it is essential for a well balanced modern SAR organisation to possess helicopters.*

#### **Difficulties because Helicopters are operated by the Military**

- 41 The same difficulty of equipment arises as for long range aircraft, the equipment fitted being in accordance with military needs. As we explain later when we deal with radiocommunications, the problem of communication with the other SAR units is being solved, and we do not

consider that it is important, having regard to their normal area of operations, for helicopters to be able to "home" on to marine distress frequencies. But their operational capabilities are dictated by military requirements. In effect, this has meant a limitation of operational range and an inability to operate at night or in poor visibility. These problems will, however, to a large extent be overcome in the early 1970s with the introduction to service of the Wessex helicopter, which will possess the ability to operate at night and will also have a longer range and slightly greater speed.

- 42 The problem of bases is more serious. The present bases, sited where they best meet military needs, are not ideally located for civil marine SAR operations. Moreover, military needs may require reallocation of helicopter detachments at any time. As an instance of this, the helicopter detachment at Manston was withdrawn at the end of March 1969, for service elsewhere. This particular detachment was one of the most important from the point of view of civil search and rescue as it served the busy south east corner of England, but it had ceased to fulfil a military need.
- 43 Further, it has now been announced that, because of the rundown in fixed wing flying, the RN air stations at Brawdy and Lossiemouth are to be relinquished by the Fleet Air Arm in about 1971/72, and that the RAF helicopter detachment at Chivenor will be transferred to Lossiemouth in the autumn of 1972. The result will be that large areas of the coasts of southern England will be left devoid of helicopter cover at instant readiness. As will be seen from the statistics in Appendix G these are areas in which the marine casualty rate is highest, and in which a fully efficient search and rescue service is most needed.
- 44 We consider that the dependence of the United Kingdom Search and Rescue Organisation on military helicopters, without the civil authorities having any control over their location or operation, is unsatisfactory if adequate nationwide coverage is to be given for civil marine search and rescue. *We therefore recommend that the Government should examine the possibility of making civil funds available for the operation of SAR helicopters where there is inadequate coverage by military aircraft deployed for military SAR purposes. If this is accepted the Board of Trade in conjunction with the Ministry of Defence should examine whether these helicopters should be operated by the military, or by civil authorities. Most of the operations carried out by helicopters along the coasts are for rescues which are not properly the responsibility of the Board of Trade and we therefore suggest that the Home Office and the Ministry of Housing and Local Government and Regional Planning should also be concerned in any discussion on this subject.*

- 45    One of the biggest problems when a ship is missing and no distress message has been received is to know where to look for it. It can also be helpful, when a distress message is received to know what other ships may be in the vicinity.

### Position Reporting

- 46    The International Conference on Safety of Life at Sea, 1960\* recommended (Recommendation 47) that Contracting Governments should encourage all ships to report their positions when they are travelling in areas where there are arrangements to record ships' positions for search and rescue use, and that such reports should be free of cost to the ships concerned.
- 47    By far the most extensive reporting system is the Automated Merchant Vessel Reporting System (AMVER) operated by the United States Coast Guard. It is free to users. Ships of all nations making offshore voyages of 24 hours duration or longer are encouraged to send movement reports and periodic position reports to the AMVER centre at New York via denoted coastal radio stations and ocean weather ship radio stations. Reports may be made at any time. Information from these reports is fed into an electronic computer which supplies dead reckoning positions for the vessels while they are within the plotting area. Characteristics of vessels which are valuable for determining SAR capability are also entered into the computer from available sources of information. Appropriate information concerning the predicted location and SAR characteristics of each vessel known to be within the area of interest is made available upon request to recognised SAR agencies of any nation, or person in distress, for use during an emergency. Predicted locations are only disclosed for reasons connected with maritime safety.
- 48    Although we recognise that the AMVER system can prove of value in some cases of distress, there are some limitations in the method used to update position reports of ships. The chief merits of the system appear to lie in the information it can provide about the medical facilities aboard ships, for use in medico cases and, though required less frequently, in the information about ships in the vicinity which can be made available to an

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\*International Conference on Safety of Life at Sea, 1960.  
Published for IMCO by HMSO, 1960.

aircraft which has to be ditched. The Board of Trade, in Merchant Shipping Notice M504\*, have recommended British ships to participate in the AMVER system, and of a total of 5568 participants in 1968, 647 were United Kingdom registered ships. For reasons given in later paragraphs of this chapter we see no strong grounds for the introduction of a similar system in the United Kingdom, but *we nevertheless endorse the recommendation given to United Kingdom ships to participate voluntarily.*

### Reporting Procedures in the United Kingdom

- 49 The United Kingdom does not operate a full position reporting system on the lines of AMVER. Certain reporting procedures are followed, however, and are outlined in the following paragraphs.

#### The "TR" System

- 50 In order to facilitate the routing of public correspondence radio messages, ships are encouraged to furnish coast radio stations in the United Kingdom (and the Irish Republic) with particulars of their voyages. This information, prefixed by the abbreviation "TR", includes the ship's position and next port of call.
- 51 These particulars are not furnished for search and rescue purposes but can occasionally be of use (see paragraph 53). The first thing the coast radio station does when it picks up a distress message is to re-broadcast it on the distress frequencies, preceded by the appropriate alarm signals, in order to alert as many ships in the area as possible. The CRS also informs the Coastguard, who co-ordinate and organise any necessary assistance which may be required of the shore based SAR authorities. Ships near to a casualty which have been alerted by the coast radio station's alarm signal and broadcast, report their positions immediately and the coast radio station soon knows which ship is nearest to the vessel in distress. The nearest ship, and others if necessary, then indicate if they are proceeding to the assistance of the casualty, and their ETA.
- 52 In practice it has been found extremely rare for a coast radio station to get no response to a broadcast to ships, or to have to ask the nearest ship if she is proceeding to assist. Should the need arise, reference can be made to the "TR" reports to see which ships should be in the vicinity of the casualty. Cases requiring medical treatment at sea can also often be dealt with satisfactorily by means of radio broadcast messages, with reference to "TR" reports if necessary. We see no obvious advantages in the United Kingdom adopting a separate position reporting system on the lines of the United States AMVER system, which is very expensive to operate.

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\*Merchant Ship position reporting. August 1968.  
Merchant Shipping Notice M504 (Board of Trade)

## Radio Weather Reports from British Merchant Observing Ships

- 53 As part of the International Weather Observer Programme, arranged by the World Meteorological Organisation, about 700 United Kingdom registered ships, when in prescribed areas, voluntarily transmit routine weather messages, addressed to meteorological centres through specified coast radio stations. The charges for the reports, which should be made four times daily and include the names and positions of the ships, are borne by the meteorological service to whom they are addressed.
- 54 The provision of the information on ships' positions in these reports, which are transmitted to the Meteorological Office at Bracknell from participating ships up to as far as 40° West thus in effect constitutes a limited position reporting system. The United States meteorological centres do, in fact, extract this information from the weather messages they receive and pass it to the AMVER centre in New York to supplement the other reports made by AMVER participants.
- 55 The Meteorological Office at Bracknell maintains a plot of the reporting ships' positions, and we considered whether a SAR centre should be set up to process this information and make it available to the authorities in appropriate cases of distress. We concluded that, although there might be occasions when the information could be of value, these are unlikely to be frequent enough to justify the cost of establishing such an organisation. *We do, however, recommend that the attention of HM Coastguard Divisional Inspectors and RCC Controllers be drawn to the existence of the plot which is maintained, so that the assistance of the Meteorological Office may be sought in those distress cases when a broadcast to shipping fails to evoke a satisfactory response.*

## Position Reporting by Fishing Vessels

- 56 All owners of British fishing vessels of 80 feet registered length and above, and many owners of smaller British fishing vessels voluntarily operate a daily reporting system for their vessels. The skippers report their positions by radio to their owners via an appropriate United Kingdom or foreign coast radio station. The owners are charged the cost of the messages by the Post Office. The purpose of the procedure is to enable the search and rescue authorities to be alerted as soon as possible should a regular radio contact fail to be made and to give them an approximate initial datum position if a search and rescue operation has to be mounted.
- 57 The effective operation of the scheme depends both on fishing vessels regularly reporting their positions and on owners or agents ashore, when they do not receive a report, promptly informing HM Coastguard (usually

via a District Inspector of Fisheries) for them to take such action as they consider appropriate. The system undoubtedly involves a risk of unnecessary searches being made because of radio failure, and to minimise this *we recommend that fishing vessels operating a daily reporting system should carry a reserve radio equipment.*

- 58 The Committee of Inquiry into Trawler Safety, under the Chairmanship of Admiral Holland-Martin, whose report\* was published in July 1969, came to the conclusion that although the value of position reporting from the standpoint of safety should not be exaggerated, positive information in the form of a distress call being far more precise and reliable, it is a useful "long stop" which might bring help to a ship in distress if all else failed. *We concur with this.*
- 59 The Committee examined the operation of the present system and considered that it would be useful if means could be provided to speed up the position reporting messages from trawlers. They recommended that the Board of Trade and the Post Office should look into this in consultation with the fishing industry. *Again we concur with this recommendation.*
- 60 The Committee also came to the conclusion that a plotting system would be desirable in conjunction with the position reporting from trawlers and recommended that the Board of Trade should discuss with the fishing industry possible ways of achieving this. In general, for the reasons outlined in the paragraphs dealing with the "TR" system, we are not convinced of the value of shore based plotting as an aid to the search and rescue organisation. In the special case of trawler operations the Coastguard could maintain a check on the working of the position reporting system, and when there were a missing vessel might also be able to say which trawlers in the area should try to make contact with the vessel in question. But we do not think that there is a sufficient need for a centralised trawler plot except in connection with the support ship at present provided off Iceland in the winter months by the Board of Trade. In this case it has proved useful. *We do not, therefore, fully support the proposals for plotting made in connection with this recommendation of the Holland-Martin Committee.*

### Surveillance of Yachts on Passage

- 61 HM Coastguard operate a scheme for the surveillance of yachts on passage in the coastal waters of the United Kingdom. The aim of the scheme is to obtain early information that a yacht is overdue, and so to localise the area for search should one become necessary.

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Trawler Safety. Final Report of the Committee of Inquiry into Trawler Safety. 1969.Cmnd.4114 (HMSO)

- 62 The scheme is dependent on yacht owners or masters making a specific request for the service. Those Coastguard stations on watch and able to sight the yacht on its passage pass the information on its progress to their respective Rescue Headquarters which, in turn, take responsibility for surveillance of it until it has been positively identified by a Coastguard station in another district along the route. The successful operation of the scheme depends upon the owner or skipper immediately reporting his arrival at his destination, or at an intermediate port, or any change of plan during the voyage.
- 63 If at any stage the Coastguard consider the yacht to be overdue, enquiries are made of harbour masters, yacht clubs, Lloyd's and the appropriate coast radio stations, with a request for a broadcast to shipping if this is thought necessary. If these measures fail to locate the vessel, the possibility of requesting air search is considered.
- 64 *We consider that this scheme has proved its usefulness and should be continued.*



### Carriage of Radio Equipment by Ships

- 65 Radio is of paramount importance as a means of bringing rescue to a ship in distress as soon as possible. It is also used for public correspondence with ships, but we were only concerned with its use for safety.
- 66 To make the most effective use of radio as a means of saving life there are internationally agreed marine distress procedures including universal distress frequencies, watchkeeping arrangements and periods during which ordinary commercial messages are not allowed. There are also international requirements for the carriage of radio equipment on ships.
- 67 There are two medium frequencies (M/F) for distress purposes, 500 kHz for radiotelegraphy (W/T) (i.e. morse) and 2182 kHz for radiotelephony (R/T)(i.e. speech). W/T distress calls are prefixed by "SOS" in morse and R/T distress calls by the word "MAYDAY"
- 68 There are historical reasons for having two frequencies. Cargo ships of 1,600 tons and above, and all passenger ships, must carry W/T; cargo ships of 300 tons and above but less than 1,600 tons have the option of fitting either W/T or R/T. The United Kingdom Radio Rules\* apply these international requirements for international voyages, which stem from IMCO and the 1960 Safety of Life at Sea Convention†, to British ships and they have been extended to apply to coasting ships as well. The United Kingdom rules also extend to fishing boats of more than 140 feet in length, which must carry radio but have the option of fitting either W/T or R/T.
- 69 Ships fitting W/T compulsorily (known as W/T ships) must carry qualified radio operators and maintain a continuous listening watch on 500 kHz. This can be partly by automatic means, using a special type of radio equipment to give an automatic alarm. Ships fitting R/T compulsorily (R/T ships) must keep a continuous listening watch on 2182 kHz. This latter watch can be broken if the radio receiver is actually in use on another frequency, or if the maintenance of the

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\*The Merchant Shipping (Radio) Rules, 1965 (S.I.1965/1107)  
The Merchant Shipping (Radio) (Amendment) Rules, 1969 (S.I.1969/1315)  
The Merchant Shipping (Radio) (Fishing Boats) Rules, 1965 (S.I.1965/1108)  
The Merchant Shipping (Radio) (Fishing Boats) (Amendment) Rules, 1969 (S.I.1969/1316)

†International Convention for the Safety of Life at Sea, 1960. 1965 Cmnd.2812 (HMSO)

radio watch would interfere with the safe navigation of the ship. We are not aware of auto alarms for radiotelephony on ships (although coast radio stations may have them) but a radio receiver for watchkeeping with a "filtered" ("gated") loudspeaker is available and may be fitted. With the volume control turned down, the receiver suppresses sound, but allows a special two-tone alarm signal to be heard. When this signal is heard, the volume should be turned up to allow the spoken distress message to be heard in the normal manner. W/T ships must fit automatic keying devices to generate the signal which actuates the W/T auto alarm, and R/T ships must fit two-tone R/T alarm signal generating devices.

- 70 W/T ships fitting R/T voluntarily need only maintain W/T watch, whilst R/T ships fitting W/T voluntarily need only maintain R/T watch.
- 71 The system works well. There are obvious disadvantages in having two different frequencies although each system has its own special advantages. In the R/T network there is also the disadvantage that small ships, e.g. yachts, which fit R/T voluntarily, may not carry a two-tone alarm generating device, and so be unable to alert an R/T ship which has a "filtered" loudspeaker in operation. We considered, however, that a study of the international marine radio distress system was outside our terms of reference. Such a study is at present being undertaken by IMCO.
- 72 In addition to the two M/F distress frequencies there are a number of other frequencies which may be used for various search and rescue activities. A list of these together with a list of the frequencies carried by United Kingdom SAR units is at Appendix F. In particular, marine type VHF/FM R/T equipment is carried by a number of ships, including some small boats which have no other radio equipment. There is no actual VHF marine distress frequency, but 156.8 MHz (Channel 16) is the international safety and calling frequency and can be used for distress messages where no other frequency is available.

### **Shore Based Radio Equipment**

- 73 The United Kingdom maintains 11 coast radio stations operated by the Post Office. Oban Coast Radio Station maintains a continuous watch only on 2182 kHz but the remainder maintain a continuous watch on both 500 kHz and 2182 kHz. The stations also operate for public correspondence on other working frequencies. There are also Post Office long range stations. Seven of the coast radio stations are fitted with VHF/FM R/T.
- 74 The Post Office coast radio stations are normally the first places to pick up any distress messages. The maximum ranges normally obtainable are about 500 miles for 500 kHz and 250 miles for 2182 kHz. The ranges, however, vary considerably with prevailing conditions, particularly on 2182 kHz

and also depend upon the strength of the signals radiated by the ship. The normal ranges for fishing vessels, for example, may well be smaller than these. The coast radio stations re-broadcast all distress messages on both 500 kHz and 2182 kHz, so as to alert as many ships in the area as possible, and they also inform the Coastguard.

- 75 Under the Post Office Act, 1969\*, the 'non-government' Post Office took over many of the duties of the old General Post Office, including the operation of the coast radio stations. The Post Office staff and stations continue to operate as before the change, and relations with the Coastguard are unaltered. We see no reason why there should be any deterioration in the service provided by the coast radio stations and consider that the change is unlikely to affect the efficiency of the United Kingdom Search and Rescue Organisation.
- 76 Twenty-four Coastguard stations are equipped with M/F radio transmitters to enable them to communicate with their local RNLI life-boats on 2182 kHz, or on a working frequency when this is appropriate. All regular Coastguard stations maintain a listening watch on 2182 kHz, which often enables them to intercept a distress message and take preliminary action before receiving the information from the Post Office coast radio station. By means of these receivers they are also able to keep in touch with search and rescue communications on 2182 kHz. We consider that both this monitoring equipment, and the transmitters at certain stations, increase the efficiency of the Coastguard, and so of the organisation as a whole, and *recommend that the Coastguard should consider also installing receivers at important auxiliary stations.*

#### **Radiocommunication between Units of the Search and Rescue Organisation**

- 77 Radiocommunication between the various units of the United Kingdom Search and Rescue Organisation has in the past been poor. Until recently there were no direct radio communications between Coastguard stations, or between Coastguard stations and military helicopters, though some stations equipped with VHF/FM R/T could communicate with RNLI life-boats, and the latter were fitted with VHF/AM R/T radio in order to communicate with helicopters.
- 78 The situation is now improving and, in addition to the M/F radio equipment mentioned earlier, a programme of equipping all regular and some important auxiliary Coastguard stations with VHF/FM R/T radio transmitter/receivers is being carried out. Over 60 stations already have

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\*Post Office Act, 1969 (HMSO)

this facility, and in addition 120 portable sets have been issued where appropriate, and about 25 vehicles have been equipped with VHF. Eventually every regular station will have a VHF/FM R/T transmitter/receiver in the Look-out, and also a vehicle with a similar transmitter/receiver. The original purpose of this equipment was to provide alternative communication with RNLI life-boats, where the M/F radio link was not always satisfactory. As the number of stations so fitted increased, the use of Channel 0 (156.0 MHz) as an exclusive radio channel for inter-communication between Coastguard stations and RNLI life-boats on inshore casualties became a major factor in the increase of efficiency. These inshore casualties generally concern small craft without radio equipment. A controlling station can immediately contact Coastguard Rescue Companies and Coastguard vehicles, as well as RNLI life-boats and IRBs and a start has been made, on a trial basis, in providing RAF helicopters with similar equipment. These will have Channel 0 for communicating with the Coastguard and RNLI life-boats, and Channel 16 (156.8 MHz) to communicate with ships. The fitting of Channel 0 in helicopters is at present only experimental because of possible interference to land users on frequencies below 156.0 MHz.

79 All life-boats have M/F radio. About half the life-boats and many inshore rescue boats also have VHF marine type equipment. The fitting programme is incomplete; the final objective is to fit all life-boats and those inshore rescue boats which need it. Practically all life-boats are now equipped with VHF/AM radio for direct communication with SAR aircraft on 243 and 282.8 MHz.

80 We regard it as absolutely essential for the efficient operation of the United Kingdom Search and Rescue Organisation that there should be direct communication between the various units. In the case of mobile units this must be by radio. Land stations could use direct land lines, but this has the disadvantage that other units cannot hear what is going on. *We recommend therefore that the fitting programme for VHF marine type equipment operating on 156.0 MHz (Channel 0) should continue so that in future, as far as is practicable, all United Kingdom SAR Units, both fixed and mobile, should have this facility. We further recommend that the equipment should have the additional frequency of 156.8 MHz (Channel 16).* The latter frequency is the calling and safety frequency in the marine VHF band, so that by fitting it SAR units can also have direct radio communication with those ships which carry VHF/FM R/T equipment.

## **Radiocommunication with Long Range SAR Aircraft**

- 81 Normally direct radiocommunication between civil aircraft and merchant ships or fishing vessels is not possible because international aeronautical radio frequencies are different from marine frequencies. Even if a common frequency could be found in the VHF band, it could not be used successfully, because aviation VHF equipment is amplitude modulated, whilst marine VHF equipment is frequency modulated. These two modes are incompatible. The usual means of communication between ships and aircraft is therefore via land based radio stations in the marine and aviation networks.
- 82 IMCO, in collaboration with ICAO, has studied this problem. It has concluded that there is little need for direct radiocommunication between ships and aircraft in general, but that it is desirable for SAR aircraft to be able to communicate with ships. It has therefore recommended that SAR aircraft should be fitted with radio equipment capable of communicating on 2182 kHz, the marine radiotelephony distress frequency, and that it would be desirable for such aircraft to be able to "home" on to this frequency. (We discuss direction finding and "homing" later in this chapter.)
- 83 Following the IMCO recommendation, all United Kingdom Shackleton search and rescue aircraft have now the facility for communication with (but not for "homing" on to) ships on 2182 kHz, and we understand that the future replacement of the Shackleton, the Nimrod, which may be used in SAR operations will also have this facility.

## **Portable Emergency Radio Equipment including Radio Beacons**

- 84 Broadly two types of portable radio equipment are carried in British ships for use in survival craft. The first is a manpowered portable type capable of transmission and reception on 500 kHz and 2182 kHz, and transmission only on 8364 kHz. This type is required to be carried on most British ships on international voyages, although there are dispensations for ships on the shorter voyages. The other is a smaller, battery powered type capable of transmission and reception on 2182 kHz only. This is required on fishing vessels over 60 feet in length unless they carry one of the manpowered portable types. There are dispensations in certain circumstances for fishing vessels between 60 and 80 feet in length. There are cheaper versions of the battery powered type available for small boats.
- 85 Over the past few years there have been discussions in IMCO about emergency position indicating radio beacons. The International Conference on Safety of Life at Sea, 1960\* recommended

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\*International Conference on Safety of Life at Sea, 1960.  
Published for IMCO by HMSO. 1960.

(Recommendation 48) that governments should "encourage the equipping of all ships where appropriate with a device of this nature which shall be small, lightweight, floatable, watertight, shock resistant, self energising and capable of 48 hours' continuous operation". IMCO has recently confirmed this recommendation. The recommendation goes on to say that IMCO should consult with ICAO and the International Telecommunication Union (ITU) with a view to determining the characteristics of the equipment. This has been done and IMCO has recommended that the beacons should operate on 2182 kHz and additionally on any other frequency that individual governments may require.

- 86 The final Report of the Committee of Inquiry into Trawler Safety,\* published in July 1969, recommends (the first part of Recommendation 29) that the Board of Trade should investigate the possibility of requiring life-rafts to be equipped with small radio beacons.
- 87 There are advantages and disadvantages in using marine beacons. Their main and obvious advantage is that they will operate automatically, and do not require human operators. For example, beacons would operate even if the survivors were unconscious, or for any other reason unable to operate the radio equipment. Their main disadvantage is that, in spite of their name, they can in themselves give no indication of position. Consequently the only way to locate such beacons is by the use of direction finding (D/F) equipment operating on 2182 kHz. There is also a psychological disadvantage in that the survivors do not know whether or not rescue is on its way. The operator of a portable radio set can broadcast his position, and can communicate with rescuing ships. For these reasons the United Kingdom has expressed the view at IMCO discussions that in general a portable radio set is a better life-saving aid than a portable position indicating radio beacon. *We endorse this view.*
- 88 The military use locator beacons operating on 243 MHz, whilst ICAO recommend the carriage on civil aircraft of radio beacons which operate on 121.5 MHz and 243 MHz. United Kingdom military aircraft can "home" on to either of these frequencies, but cannot "home" on to 2182 kHz.
- 89 It would thus facilitate air search if a beacon operating on either 121.5 MHz or 243 MHz were carried in ships in addition to portable radio equipment. On the other hand final rescue well out to sea is by ships, which only carry marine type radio equipment, and can only "home" on to 500 kHz transmissions, or, in some cases, 2182 kHz. The latter

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\*Trawler Safety. Final report of the Committee of Inquiry into Trawler Safety. 1969, Cmnd 4114 (HMSO)

facility will become more common when the IMCO Regulation requiring ships of 1,600 tons and above to fit 2182 kHz D/F equipment comes into force (see paragraph 93). The arguments for and against the various frequencies are finely balanced, and *we recommend that the Board of Trade should examine the possibility of producing specifications for a beacon operating on 2182 kHz alone and also 2182 kHz with in addition either or both of 121.5 MHz and 243 MHz*. Such a beacon could be carried by ships on international voyages as a voluntary addition to their portable radio equipment. We cannot at present see any justification for mandatory carriage.

- 90 The fishing industry has strongly represented to us that in their special circumstances rescue usually comes from another fishing vessel in the same area. Their special worry is that in the dangerous waters in which they fish a vessel may be overwhelmed before there is time to send out a distress message on the ship's fixed radio equipment. Although the portable radio equipment remains the primary rescue communication equipment, it may not always be possible to get the portable set into a liferaft. In such circumstances a "float off" buoy may offer an alternative means of rescue communication. The buoy would contain a beacon operating on 2182 kHz and, if practicable, on a secondary aviation frequency. The buoy would automatically float free of the vessel if it were overwhelmed and start to send out the characteristic beacon signal. We concur with the industry that fishing vessels are a special case. *We recommend that the Board of Trade should examine the possibility of producing a specification for a beacon suitable for fishing vessels.*

#### **Ship and Aircraft Based Direction Finding Equipment**

- 91 At present the 1960 Convention for the Safety of Life at Sea\* lays down that ships above 1,600 tons on international voyages shall be fitted with D/F equipment operating on frequencies around 500 kHz. There are dispensations in certain circumstances for ships of less than 5,000 tons. The D/F equipment serves two purposes. First it enables the ship to fix its own position by taking bearings on radio beacons which are provided by the various lighthouse authorities throughout the world. Secondly it enables the ship to "home" on to transmissions on the W/T distress frequency of 500 kHz.

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\*International Convention for the Safety of Life at Sea, 1960. 1965.  
Cmnd.2812 (HMSO)



- 92 There are no international nor, in the United Kingdom, national requirements for the carriage of D/F equipment operating on 2182 kHz. Such equipment would serve no navigational purpose because there are no radio beacons operating on this frequency. It would, however, enable a ship to “home” on to transmissions on the frequency.
- 93 Largely because of the introduction of emergency position indicating radio beacons, which are carried by a number of foreign ships, there has been international pressure for the compulsory carriage of D/F equipment on 2182 kHz. Direction finding on 2182 kHz has been studied by the International Radio Consultative Committee of the ITU. Although it is recognised that there are severe technical problems limiting the accuracy of the equipment, it is considered that sufficient accuracy is available for “homing” purposes. As a consequence the assembly of IMCO has recently agreed an amendment to the Convention to the effect that new ships of 1,600 tons and above should fit D/F equipment capable of “homing” on to 2182 kHz.
- 94 As mentioned in paragraph 82, IMCO has said that it would be desirable for SAR aircraft to be able to “home” on to transmissions on 2182 kHz. The SAR aircraft of a number of countries are able to do this, but neither United Kingdom Shackletons nor helicopters used for SAR have this facility. In view of the growing international use of 2182 kHz, and in particular the use of emergency position indicating radio beacons, we consider that the ability to “home” on to the frequency at sea is already a valuable safety factor, and will probably increase in importance in the future. *We therefore recommend that the RAF should fit the appropriate equipment into SAR Shackletons if it is practicable to do so.*
- 95 Helicopters have a relatively short range, and so only deal with incidents on and around our coasts. In these circumstances the fitting of a “homing” device on 2182 kHz is of lesser importance than on long range search aircraft.

#### **Shore Based Direction Finding Equipment**

- 96 Until 1961 there was a chain of D/F stations around the coasts of the United Kingdom. They were located at certain coast radio stations, and provided full coverage on 500 kHz. This service fulfilled two purposes. It:
- (i) provided bearings on transmissions from a ship which enabled the ship to fix its position; and
  - (ii) provided bearings in distress cases.

- 97      Additionally 3 stations also operated experimentally on 2182 kHz. Results from these 3 stations were disappointing in that bearings on transmissions on this frequency proved considerably less accurate than bearings on transmissions on 500 kHz. The range on 2182 kHz was also shorter so that it would have required many more stations to provide full cover round our coasts.
- 98      The use made of the service declined considerably in the 1950s and it was closed down in 1961, because the navigational use made of it was negligible, and past records suggested that its potential value in distress cases was not high enough to warrant the expenditure necessary to maintain it.
- 99      We have considered the matter again in the light of the increasing use of 2182 kHz and the carriage of emergency position indicating radio beacons operating on this frequency. Present accuracies are still insufficient for there to be a clear case for the introduction of a United Kingdom shore based D/F service, giving complete coverage on 2182 kHz for search and rescue purposes. It is possible, however, that even relatively inaccurate D/F equipment could usefully be employed in some types of distress case, in order to reduce the area of search. Experiments are at present being conducted by HM Coastguard, and *we recommend that the matter be reconsidered when the results have been evaluated.*

#### Shore Based Radar

- 100      We have considered the part which shore based radar could play in search and rescue operations.
- 101      The possibility of using a shore based radar to "warn off" vessels standing into danger appears to be limited unless a means of positive identification, or of giving an effective "warning off" signal, can be found. The possibility of using it to direct a rescue craft on to a casualty seems to be more promising. Small craft make poor radar targets, but could probably be distinguished if they carried an adequate radar reflector. We have recommended the continuance of development work on radar reflectors in the chapter on research and development.
- 102      It appears to us, therefore, that the use of shore based radar to assist search and rescue might be worthwhile. So far there is little practical experience in such use of radar, but experiments are at present being conducted by HM Coastguard. *We recommend that the experiments be pursued and that, if the results prove satisfactory, the Board of Trade should examine the possibility of installing radar equipment at appropriate Coastguard stations.*

- 103     In the last decade there has been a rapid increase in the number of privately owned and operated pleasure craft. Casualties involving these craft now form a high proportion of the incidents dealt with by the search and rescue organisation. For example, in the year 1968/69 the busy South Eastern District of the Coastguard handled 354 small boat incidents against 135 other incidents. In 1963/64 in the same area the figures were 116 and 110 respectively. These figures do not include false alarms.
- 104     The increase in incidents relating to small craft is probably due for the most part to the sheer increase in the number of craft. But some avoidable casualties are caused by inexperience, whilst others may result from the more experienced taking that little extra risk. Many yachtsmen, too, are careless about letting their relatives and friends on shore know their intentions. The latter sometimes become anxious and approach the SAR authorities for help, and unnecessary and costly searches may ensue.
- 105     Some casualties may arise from the lack of regulations requiring minimum standards for the boats or the carriage of safety equipment. Small craft below 45 feet in length are free of such regulations. The lack of regulation about equipment results in many boats going to sea without flares or radio equipment so that should they get into difficulties they cannot alert the SAR authorities.
- 106     Yachtsmen are not required to pass any tests in seamanship or to have a knowledge of the International Regulations for Preventing Collisions at Sea, 1960\* which, in their entirety, apply to yachts. In particular the Regulations specify the lights to be carried by vessels and the need to keep a proper lookout. An unlit vessel keeping a poor lookout is a potential menace.
- 107     To cope with the special problems raised by small boats the RNLi has introduced fast inflatable inshore rescue boats and stationed them in areas where inshore casualties are most likely to occur. The Coastguard take the amount of small boat activity, allied to the navigational hazards of the

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\*Schedule 1 to the Collision Regulations (Ships and Seaplanes on the Water) and Signals of Distress (Ships) Order 1965. (S.I.1965/1525)

area, into account when siting stations and deciding upon the type of watch to be kept at stations. Also, the RNLI and the Coastguard both take part annually in the Boat Show to publicise "Safety at Sea". As pleasure boating continues to increase the RNLI and the Coastguard will have to keep the SAR facilities in local yachting areas constantly under review.

- 108 Our terms of reference were to examine the Search and Rescue Organisation. Safety measures at sea, training of mariners, and so forth were outside our remit. However, as the special problems of small boats have such an impact on the Search and Rescue Organisation we considered that a brief review of the present situation was justified.
- 109 We looked at several proposals for improving the safety of these craft at sea, including mandatory requirements for certificates of competency and seaworthiness, insurance, and registration. We were told that implementation of any of these measures would prove difficult. The issue of certificates of seaworthiness, for instance, would raise the problem of defining minimum standards of seaworthiness for specific areas of operation and would not be fully effective without complementary certificates of competency for yachtsmen. Their introduction would require a full scale scheme of registration, as would any system of compulsory insurance. This would be a formidable undertaking in view of the large number of small craft in existence, perhaps of the order of 250,000. Enforcement would be difficult, to say the least. We examined a system of certificates for yachtsmen produced by the Government of France and some members considered that in spite of the difficulties, a certificate system would be useful in this country. The majority, however, considered that more could be achieved by enlisting the willing co-operation of yachtsmen in improving their own standards.
- 110 The Royal Yachting Association and affiliated clubs take an active part in educating their members in the art of seamanship and in particular on safety measures both whilst racing and during ordinary sailing. The Association has introduced a National Proficiency Certificate Scheme. The scheme provides for certificates for dayboats (including keelboats and dinghies), coastal craft, motor launches and powerboats, instructors for dayboats, and offshore sailing for yachts or sail training vessels. Detailed syllabi for each certificate were prepared in consultation with a number of authorities and with the RYA recognised teaching establishments, which include commercial sailing schools, local education authorities, youth activities centres, etc. The RYA maintains a central register of those who have passed the examinations and also rigorously inspects every establishment seeking to issue these certificates. There is also an elementary

handbook\* published on behalf of the RYA in collaboration with the Water Safety Committee of the Royal Society for the Prevention of Accidents. Many local authorities conduct courses on seamanship and allied subjects. The Board of Trade have for many years conducted voluntary examinations for amateur yachtsmen and, wishing to encourage the increasing number of amateur sailors to become proficient in nautical knowledge have revised the examination syllabus and, in 1968, introduced two new voluntary certificates of competency as Yacht master (Ocean) and Yacht master (Coastal). The certificates remain voluntary and a high standard has been set to ensure that the qualifications are worthwhile. Yachtsmen are able to obtain one or both certificates although, as the titles imply, one is designed for coastal and the other for ocean going operations. Details of the examinations are described in the Board of Trade Merchant Shipping Notice No. M534.†

- 111 A working group set up by the Board of Trade is currently considering what safety equipment should be carried in pleasure yachts with a view to producing a safety equipment code. We understand that it may recommend the carriage, in addition to life-saving and fire appliances, of radio receivers, radio beacons and perhaps also of radar reflectors. We consider that suitable radar reflectors would be valuable safety devices for small boats, and in the chapter on research and development have made a recommendation about research into these devices. When a safety equipment code has been agreed, the question whether any of the recommended equipment should be carried compulsorily will be given consideration. The Ship and Boat Builders' National Federation have done a good deal to ensure sound standards of construction and equipment in small vessels. Their Code of Recommended Practices for Boats up to 20 feet in length+ also specifies safety equipment such as life-buoys, distress flares and other signalling equipment. They are considering the possibility of introducing similar codes for larger vessels.

- 112 We hope that the voluntary efforts being made toward improving the safety of small craft at sea and the consideration being given to their equipment by the Board of Trade working group will produce results, and we make no recommendation for further measures of this nature. *Nevertheless we recommend that the Government make a full study of the arguments for and against the various mandatory proposals mentioned in paragraph 109 so that if the casualty figures for small craft, which should be kept under close review, continue to increase, compulsory controls can be reconsidered.*

---

\*On the Water, In the Water (The Royal Society for the Prevention of Accidents)

† Yacht Master Certificates. April 1968. Merchant Shipping Notice M534 (Board of Trade)

+Code of Recommended Practices for Boats up to 20 feet in length. 1963. (Ship and Boat Builders' National Federation)

- 113 The constructional and performance standards of life-saving appliances carried by sea-going ships are set out in the Merchant Shipping (Life-Saving Appliances) Rules 1965 \*, as amended, which embody the requirements of Chapter III of the International Convention for the Safety of Life at Sea, 1960+. Manufacturers of life-saving appliances are encouraged by the Board of Trade to carry out development work and the Board are not, at present, conducting their own programme of research into such questions. The Board are, however, represented on IMCO's Sub-Committee on Life-Saving Appliances which normally meet once a year to discuss, and make recommendations about, various questions concerning life-saving appliances. Also, in the recent past, the Board have had their own committees on different items of safety equipment e.g. tanker lifeboats, lifejackets for the Merchant Navy, and inflatable liferafts.
- 114 HM Coastguard examine ways and means of further improving the efficiency of their rescue service and equipment. Amongst the aids being evaluated are new types of rescue rockets, vehicles for reaching people marooned in mud, and land based direction finding equipment.
- 115 The RNLI has been carrying out some development work on lifejackets and protective clothing and is also looking carefully at the use of properly qualified swimmers to operate from RNLI vessels. The Institution has a Boat and Construction Committee which examines new lifeboat designs before the Institution decides whether or not to order a prototype. Detailed tank tests are carried out before orders are placed. The Institution's technical staff did all the development work on the 37 foot and 48 foot 6 inch Oakley classes and the 48 foot 6 inch Solent class, and are at present progressing on an outside design for a fast 52 foot self-righting lifeboat to lie afloat. They are also evaluating an 18 knot glass reinforced plastic hulled boat, and different types of small fast rescue boats.

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\*The Merchant Shipping (Life-saving Appliances) Rules, 1965 (S.I.1965/1105)

+International Convention for the Safety of Life at Sea, 1960. 1965 Cmd.2812. (HMSO)

116 The Ministry of Defence conduct research on survival equipment for airmen, such as immersion suits, and we have considered whether the results of this work could have any application in the civil marine field. The design of aviation equipment, however, is largely dictated by space and weight considerations, and is comparatively costly. It is also likely to be less robust than would be considered necessary for marine equipment, and we therefore consider that there is little scope for its use at sea. The Ministries of Defence and Technology carry out work on aviation medicine which could be useful in the context of survival at sea and *we recommend that the information obtained from this research be made available to the Board of Trade and the shipping and fishing industries.*

117 Research and development work on radio aids to marine navigation is conducted on behalf of the Board of Trade by a group at the Admiralty Surface Weapons Establishment. This group has done some work on radar reflectors. We consider that a reflector giving a satisfactory response to radar beams from any direction, and light and cheap enough for small craft, would be a valuable safety device and *we recommend that this work be continued.*

- 118 Marine search and rescue is an international commitment. Indeed, Regulation 15 of Chapter 5 of the Safety of Life at Sea Convention\* requires Contracting Governments to make arrangements for marine search and rescue. There have been international meetings on the subject, such as a meeting at Gothenburg in 1955 and a seminar in New York in 1965. Flowing from the Gothenburg meeting, the Swedish Telecommunication Administration issue lists of "Coordination Centres and Radio Stations participating in Rescue Cooperation". Additionally there are international life-boat conferences every four years. The next one of these is due to be held in New York in May 1971. The RNLI provides the secretariat for these conferences.
- 119 Except for the Regulation quoted above IMCO, until recently, has not concerned itself very much with search and rescue matters. However, following the submission by the United Kingdom of the Manual on Search and Rescue at Sea for the Guidance of Masters of Ships, IMCO set up a working group to consider it. During discussion of this manual the problem of land based search and rescue authorities was mentioned, and it is possible that IMCO will be discussing this aspect in the near future.
- 120 The United Kingdom Search and Rescue Organisation often has to get in touch with continental SAR authorities about individual distress incidents. In the past the Coastguard usually had to do this via United Kingdom coast radio stations, which communicated with the appropriate coast radio stations in the country concerned, and thence to the search and rescue organisation. Liaison has been considerably improved more recently by direct telex links. In the last two years all Coastguard Rescue Headquarters have been equipped with telex.
- 121 When air search assistance is needed, it is usually left to the relevant United Kingdom RCC to make the request; it has direct links with adjacent RCCs.

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\*International Convention for the Safety of Life at Sea, 1960. 1965. Cmnd.2812 (HMSO)



- 122 Although the liaison works well, we considered that it might be improved still further by a more intimate knowledge of the precise way the different organisations function, and we have therefore sent information to and collected detailed information from a number of countries. This information is summarised in Appendix H.
- 123 In addition to this exchange of written information, we consider that senior officers of the Coastguard would profit from closer contacts with their opposite numbers. We understand that the Ministry of Defence and the RNLI already have such contacts. *We recommend, therefore, that the Coastguard take suitable opportunities to visit their contacts in the near Continental countries and offer reciprocal facilities.*

## Summary of Conclusions and Recommendations

124 Our conclusions and recommendations can be summarised as follows:

### General

- (1) The United Kingdom arrangements for marine search and rescue work extremely well, and no major changes are recommended (paragraph 7).
- (2) As more and more people put to sea in small boats there is a constant need for training, and it may eventually become necessary to consider some method to restrain those who would, otherwise, make a call on the rescue services through foolhardiness (paragraph 8).

### HM Coastguard

- (3) The existence of the emergency 999 telephone system to contact HM Coastguard is still not sufficiently known, and more publicity should be given to the Coastguard service (paragraph 20).

### Life-boats

- (4) The need for close collaboration to continue between the Coastguard and RNLI is stressed (paragraph 27).

### Coast Radio Stations

- (5) The Post Office coast radio stations are fully efficient and integrate effectively with the other parts of the search and rescue organisation. No change in the present arrangements is recommended (paragraph 33).

### Co-ordinating Shore Authorities

- (6) Although there are different shore based authorities for controlling and co-ordinating rescue operations when ships and aircraft are in distress at sea the present arrangements, which provide for close liaison between them, work satisfactorily and no change is recommended (paragraph 35).

### Aircraft

- (7) The numbers of long range maritime patrol aircraft in service are likely to fall, and a situation may arise in which it would not be possible to carry out a distant search requiring many flying hours. This presents no immediate problem, but it is suggested that the position be reviewed in a few years' time (paragraph 38).
- (8) In spite of their cost, it is considered essential for a well balanced modern SAR organisation to possess helicopters (paragraph 40).

- (9) It is recommended that the Government should examine the possibility of making civil funds available for the operation of SAR helicopters where there is inadequate coverage by military aircraft deployed for military SAR purposes. If this is accepted the Board of Trade, in conjunction with the Ministry of Defence, should examine whether these helicopters should be operated by the military, or by civil authorities. Most of the operations carried out by helicopters along the coasts are for rescues which are not properly the responsibility of the Board of Trade, and it is suggested that the Home Office and the Ministry of Housing and Local Government and Regional Planning should also be concerned in any discussion on this subject (paragraph 44).

### **Reporting Procedures**

- (10) The recommendation, given to United Kingdom ships, in Merchant Shipping Notice M504, to participate voluntarily in the AMVER system is endorsed (paragraph 48).
- (11) The cost of setting up a SAR centre to process information on ships' positions, given in weather reports to the Meteorological Office at Bracknell, would not be justified. The attention of HM Coastguard Divisional Inspectors and RCC Controllers should, however, be drawn to the existence of the plot which is maintained at Bracknell, so that the assistance of the Meteorological Office may be sought in those distress cases when a broadcast to shipping fails to evoke a satisfactory response (paragraph 55).
- (12) To minimise the risk of unnecessary searches being made because of radio failure, fishing vessels operating a daily reporting system should carry a reserve radio equipment (paragraph 57).
- (13) Except for land based plotting, the conclusions of the Committee of Inquiry into Trawler Safety are supported (paragraphs 58, 59 and 60).
- (14) The Coastguard scheme for the surveillance of yachts on passage has proved its usefulness and should be continued (paragraph 64).

### **Radiocommunications**

- (15) The M/F monitoring radio equipment at regular Coastguard stations, and the transmitting equipment at certain stations, increase the efficiency of the Coastguard, and so of the organisation as a whole. The Coastguard should consider also installing receivers at important auxiliary stations (paragraph 76).
- (16) It is absolutely essential for the efficient operation of the United Kingdom Search and Rescue Organisation that there should be direct communication between the various units. The fitting programme for VHF marine type equipment operating on 156.0 MHz (Channel O) should continue

- so that in future, as far as is practicable all United Kingdom SAR units, both fixed and mobile, should have this facility. The equipment should have the additional frequency of 156.8 MHz (Channel 16) (paragraph 80).
- (17) In general a portable radio set is a better life-saving aid than is a portable position indicating radio beacon (paragraph 87).
- (18) It would facilitate air search if, in addition to portable radio equipment, ships carried a beacon operating on an aviation frequency. This, however, would be of no assistance to rescuing ships, which carry only marine type D/F equipment. The Board of Trade should therefore examine the possibility of producing specifications for a beacon operating on 2182 kHz alone, and also 2182 kHz with, in addition, either or both of 121.5 MHz and 243 MHz (paragraph 89).
- (19) Special considerations apply to fishing vessels. The Board of Trade should therefore examine the possibility of producing a specification for a beacon suitable for fishing vessels (paragraph 90).
- (20) In view of the growing international use of 2182 kHz, the RAF should fit equipment capable of "homing" on to this frequency into SAR Shackletons if it is practicable to do so (paragraph 94).

### **Direction Finding**

- (21) There is no clear case for the introduction of a United Kingdom shore based direction finding service giving complete coverage on 2182 kHz for search and rescue purposes, though such equipment might usefully be employed in some types of distress case in order to reduce the area of search. The matter should be reconsidered when the results of experiments at present being conducted by HM Coastguard have been evaluated (paragraph 99).

### **Radar**

- (22) Experiments with shore based radar to assist search and rescue, at present being conducted by HM Coastguard, should be pursued and, if the results prove satisfactory, the Board of Trade should examine the possibility of installing radar equipment at appropriate Coastguard stations (paragraph 102).

### **Small Craft**

- (23) The Government should make a full study of the arguments for and against the various mandatory proposals mentioned in paragraph 109 so that if the casualty figures for small craft, which should be kept under close review, continue to increase compulsory controls can be reconsidered (paragraph 112).

### **Research and Development**

- (24) Information obtained from research on aviation medicine, carried out by the Ministries of Defence and Technology, should be made available to the Board of Trade and the shipping and fishing industries (paragraph 116).
- (25) Research work on radar reflectors, done on behalf of the Board of Trade by a group at the Admiralty Surface Weapons Establishment, should be continued (paragraph 117).

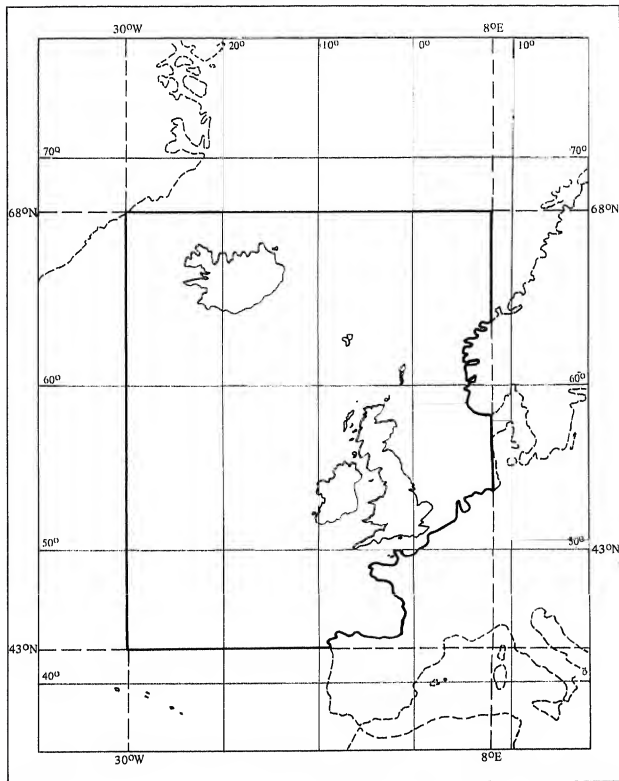
### **Liaison with Foreign SAR Authorities**

- (26) Senior officers of the Coastguard should take suitable opportunities to visit their contacts in the Continental countries, and to offer reciprocal facilities (paragraph 123)

## Appendix A

### HM Coastguard - Area of Responsibility for United Kingdom Marine Search and Rescue

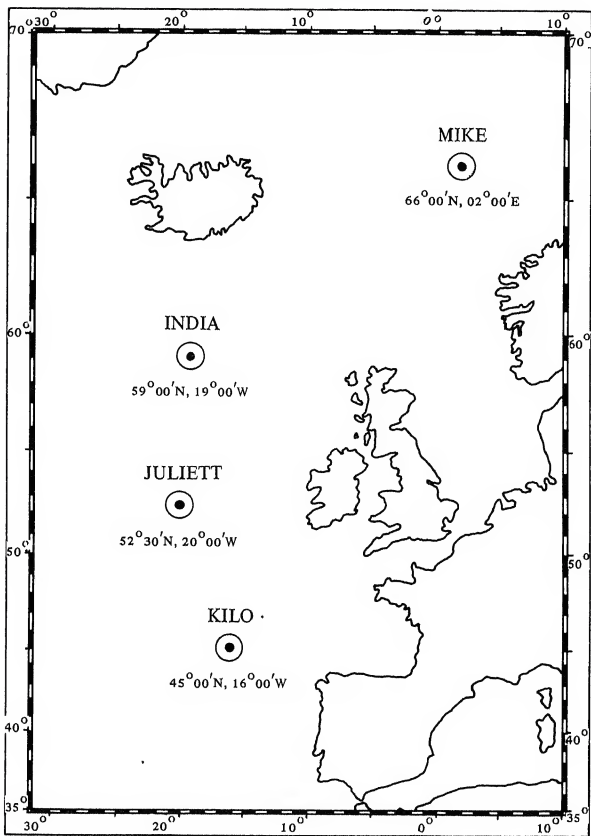
("This is a working guide for the Coastguard and in much of the Area there is liaison with foreign search and rescue authorities.")



### **Meteorological Office Ocean Weather Ships and Weather Forecasts**

- (1) Details of the various services provided by the Meteorological Office are set out in a leaflet, Meteorological Office Leaflet No.3 of 1969 entitled 'Meteorological Office Services'. Map 2 shows the disposition of the ocean weather ships.
- (2) The Meteorological Office provides weather information for ships operating in the North Sea, the English Channel, the Irish Sea and the North Atlantic seaboard. A weather routeing service for ships on the North Atlantic trade is available to shipowners on request. Regular weather bulletins are issued by radiotelephony and radiotelegraphy from Post Office coast radio stations, and by radiotelephony from BBC stations. Gale warnings are issued as necessary on each of these channels, and facilities are also available for the supply of special forecasts on request. The coastal sea areas included in these services are shown in Map 1. Radio facsimile transmissions are made throughout the 24 hours from Bracknell (see Admiralty List of Radio Signals, Vol.3).

## Ocean Weather Ships in the Eastern Atlantic





# SERVICE AREAS OF THE MEDIUM RANGE COAST RADIO STATIONS

NOTE 1.

IRISH REPUBLIC (COVERAGE  
AREA NOT SHOWN.)

RADIOTELEGRAPHY LIMITS ---  
RADIOIDTELEPHONY LIMITS - - - - -



42°

E.T.S. / R.E.S. (NP 1-5-4.)  
DECEMBER 1969.

E.T.E. 10020

## Radio Frequencies for SAR Operations

500 kHz	W/T	International distress and calling frequency.
2182 kHz	R/T	International distress and calling frequency.
3023.5 kHz)	R/T	International aeronautical mobile search and
5680 kHz) & W/T		rescue scene of action co-ordination frequency.
8364 kHz	W/T	Calling and safety frequency for survival craft.
121.5 MHz	R/T	International aeronautical emergency frequency.
243 MHz	R/T	International aeronautical emergency frequency.
3095 kHz	W/T)	International aeronautical mobile frequencies
5695.5 kHz	W/T)	used for military scene of search operations.
123.1 MHz	R/T	International aeronautical auxiliary frequency
		for search and rescue operations.
156.8 MHz	R/T	International calling and safety frequency for
(Channel 16)		the maritime mobile service in VHF/FM band.
282.8 MHz	R/T	International fixed and mobile - used in United
		Kingdom as military scene of search frequency.

The radio facilities possessed by the various units and authorities in the United Kingdom Search and Rescue Organisation are as follows:

## Aircraft

121.5 MHz	R/T	RAF long range maritime patrol aircraft and helicopters. RN and certain other RAF aircraft. "Homing" on this frequency is by the audio method only.
243 MHz	R/T	RN and RAF aircraft can communicate and "home" on this frequency.
156.0 MHz	R/T)	Some RAF helicopters will be fitted with equipment operating on these frequencies.
(Channel 0)	)	
156.8 MHz	R/T)	
(Channel 16)	)	
500 kHz	W/T	RAF long range maritime patrol aircraft and certain other RAF aircraft can listen and "home" on this frequency.
2182 kHz	R/T	RAF Shackletons have been modified so that they can listen and transmit on this frequency. They cannot "home" on the frequency.

RAF long range maritime patrol aircraft have facilities for all of the following scene of action frequencies:

123.1 MHz	R/T	Civil
282.8 MHz	R/T	Military
3023.5 kHz	R/T)	Civil/Military
5680 kHz	R/T)	
5695.5 kHz	W/T)	Military
3095 kHz	W/T)	

#### **RN and RAF SAR Vessels**

121.5 MHz	R/T	RN vessels can communicate on this frequency.
243 MHz	R/T	RN vessels can communicate on this frequency. RAF marine craft carry and can "home" on this frequency.
500 kHz	W/T)	Carried by RN vessels with "homing"
2182 kHz	R/T)	facilities on each frequency.

#### **HM Coastguard**

156.0 MHz (Channel O)	R/T	Most Coastguard stations maintain listening watch and can transmit on this channel to other Coastguard stations, RNLI life-boats and IRBs, or helicopters when fitted with VHF/FM.
156.8 MHz (Channel 16)	R/T	Most Coastguard stations can switch to this channel, but only a small number at present maintain a listening watch.
2182 kHz	R/T	Most Coastguard stations maintain a listening watch on this frequency. Only 24 can transmit in order to communicate with RNLI life-boats.

#### **RNLI**

2182 kHz	R/T	All life-boats carry a set which will operate on 2182 kHz and other medium frequencies for direct speech to other vessels or shore installations concerned in SAR operations; over half of the life-boats can "home" on these frequencies.
243 MHz (AM)	R/T)	All but seven life-boats (five United Kingdom, two Irish Republic) can operate on these channels for direct communication with SAR aircraft.
282.8 MHz (AM)	R/T)	

123.1 MHz (AM)	R/T	Channel Island life-boats use this frequency for communication with French helicopters. The seven life-boats not equipped to use 243 and 282.8 MHz can still communicate on this frequency.
156.0 MHz (FM) (Channel O)	R/T)	More than two thirds of the RNLI fleet and half of the IRB fleet have VHF/FM equipment for direct communication with HM Coastguard, harbour and other authorities on two or more of these channels. Life-boats, IRBs and HM Coastguard use 156.0 MHz(FM) as a local service frequency when other shipping in the area is not involved in the rescue operation.
156.3 MHz (FM) (Channel 6)	R/T )	
156.6 MHz (FM) (Channel 12)	R/T )	
156.7 MHz (FM) (Channel 14)	R/T )	
156.8 MHz (FM)	R/T )	
(Channel 16)	)	

### Coast Radio Stations

#### (1) International distress frequencies

500 kHz	W/T	All coast radio stations except Oban Radio.
2182 kHz	R/T	All coast radio stations.

#### (2) Safety frequencies

156.8 MHz	R/T	Clyde Radio (VHF only) and all coast radio stations except Wick, Ilfracombe, Portpatrick and Oban.
8364 kHz	W/T	Burnham/Portishead Radio.

### Ocean Weather Ships

500 kHz	W/T	Civil scene of action frequencies.
2182 kHz	R/T	
123.1 MHz	R/T)	
3023.5 kHz	R/T)	
5695.5 kHz	W/T)	Military scene of action frequencies.
3095 kHz	W/T)	
121.5 MHz	R/T)	Communications with aircraft in distress, survival craft, SAR aircraft and vessels.
243 MHz	R/T)	

## Statistics of United Kingdom Marine Search and Rescue Operations 1964-68

Table 1

Annual summaries of operations involving HM Coastguard, the Royal National Life-boat Institution, the Royal Air Force and the Royal Navy.

<i>Year</i>	<i>Coastguard incidents</i>	<i>RNLI launchings (life-boats &amp; IRBs)</i>	<i>RAF sorties Helicopters</i>	<i>Shackletons</i>	<i>Incidents involving RN helicopters</i>
1964	986	1168	374	69	64
1965	1193	1501	411	92	102
1966	1432	1784	584	76	107
1967	2161	2143	403	102	158
1968	2444	2310	416	97	216

Action initiated by HM Coastguard resulted in the following numbers of persons being rescued:

1965	1572
1966	1954
1967	2499
1968	2878

(Figures for 1964 are not available.)

### Notes:

- (1) A single incident dealt with by HM Coastguard may have involved the launching of both a life-boat and an IRB, as well as sorties by both a helicopter and Shackleton. A major incident may well have required several separate launchings and sorties, whereas another incident may not have required action by any other SAR authority. The figures include incidents involving foreign owned vessels in distress, and rescue actions by merchant ships and fishing vessels.
- (2) Coastguard statistics are for the year 1 April to 31 March inclusive. Other statistics are for calendar years.
- (3) The basis on which Coastguard statistics were compiled was altered in 1967.
- (4) On occasions HM ships are involved in SAR incidents.

Table 2 Types of SAR incident recorded by HM Coastguard

	Vessels					Other incidents							
	<i>Cargo</i>	<i>Fishing*</i>	<i>Sail</i>	<i>Motor</i>	<i>Small craft</i>	<i>Warning off</i>	<i>Medico</i>	<i>False alarm</i>	<i>Cliff rescue</i>	<i>Cut off by tide</i>	<i>Bathers</i>	<i>Aircraft</i>	<i>Total</i>
	<i>(aground, sunk, capsized, overdue, missing, in danger or in difficulty)</i>												
1964	99	143	133	132	164	X	33	57	108	55	45	17	986
1965	125	110	166	163	182	X	35	106	163	82	41	20	1193
1966	132	189	198	198	196	45	31	103	166	85	75	14	1432
1967	91	272	379	231	310	75	104	277	193	91	118	20	2161
1968	89	300	411	293	326	59	92	405	230	84	131	24	2444

\*Included under this heading are figures relating to fishing vessels hired by private individuals.

X Not available.

Table 3. Divisional breakdown of SAR incidents recorded by HM Coastguard in 1968

Division	Vessels					Other incidents						
	Cargo	Fishing*	Sail	Motor	Small craft	Warning off	Medico	False alarm	Cliff rescue	Cut off by tide	Bathers	Aircraft
North Scotland	7	61	4	8	11	10	8	24	4	1	2	4
East Scotland	3	38	16	4	11	8	-	23	14	3	3	-
North East	9	74	17	22	14	9	7	43	14	15	8	-
East	19	24	72	45	44	-	34	54	1	12	28	4
South East	16	33	161	90	103	20	16	99	21	5	20	4
South	5	13	54	42	35	4	2	52	77	17	26	4
South West	5	17	25	21	21	2	9	25	67	12	32	1
Cambrian	10	16	40	42	67	3	8	56	27	14	11	5
North West	10	19	15	10	19	1	2	20	1	2	1	2
Northern Ireland	5	5	7	9	1	2	6	9	4	3	-	-
<i>Total</i>	89	300	411	293	326	59	92	405	230	84	131	24
												2444

\*Included under this heading are figures relating to fishing vessels hired by private individuals.

## Members of the Committee to Review the Marine Search and Rescue Organisation of the United Kingdom\*

The Board of Trade	Mr E R Hargreaves ( <i>Chairman</i> ) Mr O Cochran CBE ( <i>Chairman</i> ) <i>until October 1968</i> Captain A C Manson Mr J S Parker Commander P J H Bartlett OBE, RN (Retd.) Mr H R de Belleruche Mr F J A Major ( <i>Secretary</i> )
The Ministry of Defence	Mr J Y Dickinson Wing Commander E F Hemming Mr N H Nicholls
The General Post Office (the Post Office from 1 October 1969)	Mr G H M Gleadle MSc (Eng), C Eng, FIEE Mr G F Wilson
The Ministry of Agriculture Fisheries and Food	Mr P J Derham
The Department of Agriculture and Fisheries for Scotland	Mr J M Steven
The Meteorological Office	Captain A D White
The Chamber of Shipping of the United Kingdom	Rear Admiral P W W Graham CB, DSC, RN (Retd.) Mr D Deacon
The Royal National Life-boat Institution	Captain N Dixon RN Mr J R Atterton Commander P D Sturdee OBE, RN
The Merchant Navy and Airline Officers' Association	Commodore J W Caunce OBE, RD, RNR Mr E Nevin
The Mercantile Marine Service Association	Commodore J W Caunce OBE, RD, RNR

\*Other representatives attended from time to time but these members normally attended.

Printed in England for Her Majesty's Stationery Office  
by Swift (P&D) Ltd., London, E.C.1



BOARD OF TRADE

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# Marine Search and Rescue Organisation

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*Report of the Committee to review  
the Marine Search and Rescue  
Organisation of the United Kingdom*



LONDON  
HER MAJESTY'S STATIONERY OFFICE  
1970



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## List of Abbreviations

IMCO	Inter-Governmental Maritime Consultative Organisation
SAR	Search and rescue
VHF	Very high frequency
RNLI	Royal National Life-boat Institution
IRB	Inshore rescue boat
RCC	Rescue Co-ordination Centre
CRS	Coast radio station
ATCC	Air Traffic Control Centre
ICAO	International Civil Aviation Organisation
AMVER	Automated Merchant Vessel Reporting System
kHz	Kilohertz )
MHz	Megahertz ) 1 Hertz = 1 cycle per second
R/T	Radiotelephony
W/T	Radiotelegraphy
M/F	Medium frequency
AM	Amplitude modulated
FM	Frequency modulated
ITU	International Telecommunication Union
D/F	Direction finding
RYA	Royal Yachting Association
ETA	Estimated time of arrival